

What is the Economic Impact of Reformulation for California Agriculture?

Cindy Baker
Gowan Group of Companies
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Why the Gowan Group of Companies?

- Thank you very much for the opportunity
- Who are the Gowan Group of Companies
- Registrant with impacted formulations
- Retail Business in California
- Date Grower in California
- Hope to share real world examples and impacts
- Result of consultation with WPHA and their members

Economic Perspective-with Real World Examples

- Impacts on Registrants
- Impacts on Dealers/Distributors/Retailers
- Impacts on Growers-particularly specialty crops
- Impacts on IPM
- Impacts on Air Quality and Environment

Impact on Registrants

- Ability to Reformulate
- Cost to Reformulate
 - Easily ½ a million dollars per product and 1.5 to 2 man years
- Timing
 - Development, testing and approval of alternative formulations
- Regulatory Impacts – CA, US, NAFTA, Global
- Effect on Efficacy or Phytotoxicity
- Increased Cost of Goods. Can you afford to do it just for CA market?
- Impact spray tank
 - More adjuvants, buffers
 - compatibility

Formulation Timelines

2007				2008				2009				2010				2011			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		Form		Develop.															
				Prod. Chem															
				Med. Tox															
				Biol.				Eff.&Phyto											
				→				Fedl. Reg.											
								→				CA Reg.							
				Form. Devel.															
				Prod. Chem															
				Med. Tox				→											
				Biology				Eff.&Phyto											
								Fedl. Reg.				→							
												CA Reg.				→			

Real World Examples

- EPTC – Eptam
 - COGs- to reformulate to meet the current target of 20% (based on TGA) would increase the COGs by 3X
 - Impact – Eptam is currently as concentrated as it can be. We could formulate to 20% but would be putting almost 5X the inerts into the environment for no benefit to the crop. It wouldn't reduce VOC emission and might increase emissions from other sources
 - Soil incorporation – The label requires the product be immediately incorporated into the soil. The product won't work if it isn't immediately incorporated. Eptam binds to the soil and will not volatilize if immediately incorporated.
 - Conclusion – the Eptam is not volatilizing now. TGA does not accurately estimate true atmospheric availability. So I could spend a lot of money and increase the cost to growers and meet the requirements of the law and it would not impact VOCs at all. Might make them worse.
 - Great example for why we need exceptions. We need an option for a tiered approach beyond TGA to better estimate VOC emission potential

Another Example

- Oxydemeton-methyl – MSR
 - Inability to reformulate due to limited stability of the active ingredient. Already formulated to the greatest concentration possible but need solvent for stability
 - Systemic product – little volatilization taken up into the plant
 - Critically needed – lettuce aphid
 - Limited use – coastal lettuce and cole crops
 - Conclusion – if other properties about the use, area of use, etc were taken into consideration, a critical tool for minor crop growers could be saved.

Impact on Dealers/Distributors/Retailers

- Increased Cost of Goods
- Further Decreasing Margins –impacts ability to do the job the same way- training, stewardship
- Adoptability of new products/formulations
- Impacts on IPM
- Unintended consequences – transportation, warehousing, increased trips through the field = more fuel costs, vehicle exhaust (VOC +NOx), soil compaction, etc.

Impact on Growers

- Increased input cost
- Reeducation – new label, new use rates, new methods of use
- Uncertainty of performance – efficacy/phytotoxicity
- Impact on IPM = product selection, program approach, timing, action thresholds
- Unlevel playing field

Real World Examples

<i>Crop</i>	<i>Liquid Per acre</i>	<i>Dry Per acre</i>	<i>Difference</i>
Cotton	Endosulfan 3EC \$6.39/acre	Endosulfan 50W* \$19.65/acre	\$13.26/acre – 200 acres \$2700 more for 1 product
Citrus	Lorsban 4E \$37.55/acre	Lorsban 75 WG \$77.29/acre	\$39.74/acre – 300 acres \$11,922 more for 1 product
Alfalfa	Eptam 7E \$13.46/acre	Eptam 20G \$27/acre	\$13.54/acre – 600 acres \$8100 more for 1 product
Almonds	Omite 6E \$47.23/acre	Omite 30WS \$62.00/acre	\$14.77/acre – 400 acres \$5900 for 1 product
	Lorsban 4E \$18.78/acre	Lorsban 75WG \$44.43/acre	\$25.65/acre – 400 acres \$10,200 for 1 product

Impact on IPM

- Efficacy
- Increased Use
- Could completely change crop management system
- Compatibility – new tank mixes, may lead to separate (more) sprays. (example: Bt compatibility with liquid formulations – switch to DF – compatibility issues)

Efficacy of Dry vs. Liquid Formulation

	Herbicide A applied at 512 g/ha % Control 19 Days after Application		
	Ivyleaf Morningglory (IPOHE)	Velvetleaf (ABUTH)	Prickly Sida (SIDSP)
EC	63%	100%	65%
Dry Flowable	40%	80%	40%

- Conclusion: 25-50% more active required to achieve the same result

Real World Example

- Miticides- avermectin, propargite
- EC's are known to provide more efficacy on mites when compared to dry formulations
- Crop oil is often needed for mite control and can allow reduced use rates— with a solid formulation there can be a compatibility issue

Impacts on Air Quality & Environment

- Unintended consequence - MTBE example in gasoline
- Cost and air pollution contribution from increased trips through the field/orchard – VOC and NOx
- Trading VOC concern for other concern - more pesticides being applied due to less efficacy or more pest specific replacements (M/L/A exposures, increased transportation, accuracy of applications
- California Growers at a competitive disadvantage – Nationally and Globally
- California Growers not having same technology available

Final Points

- When there is real risk to the public or the environment, of course action has to be taken. Regulators first need to be sure there is real risk and then that the actions they wish to take will make a difference.
- Regulatory actions have to consider risk vs. benefit, unintended consequences, cost of change compared to desired impact
- The current TGA method doesn't adequately account for several things that do impact whether there really is a risk of VOC contribution from a product. Could pass TGA and still have VOC contribution and could fail TGA and not have a VOC contribution. We need a tiered approach to more accurately affect atmospheric availability.
- The cost to change is real and high for many stakeholders for no guaranteed reduction in VOC contributions from the products. Haste makes environmental waste. Some unintended consequences could increase air quality and human health/environment concerns.

Thank You very much

Questions??

Please ask Brian Bret